

T.C. Memo. 2007-218

UNITED STATES TAX COURT

TERRENE INVESTMENTS, LTD., DEERBROOK CONSTRUCTION, INC., Tax  
Matters Partner, Petitioner y.  
COMMISSIONER OF INTERNAL REVENUE, Respondent

Docket No. 4797-04.

Filed August 7, 2007.

Lawrence Sherlock and William Grimsinger, for petitioner.

Thomas Fenner, for respondent.

MEMORANDUM OPINION

HOLMES, Judge: This is a single issue case: what was the fair-market value of a 31.41-acre property near Houston on November 15, 1998? The property's former owner says it was \$1,801,618. The Commissioner says it was \$301,000. Both parties agree the property held valuable sand and gravel deposits, but to

extract the property's value we must sift through conflicting expert witness testimony and many subsidiary issues.

### Background

#### A. Sand and Gravel

This case arises from beneath the floodplain of the San Jacinto River, the short river in southeastern Texas that flows into Galveston Bay and on whose banks the Republic of Texas won its independence in 1836. The river today meanders past what became the City of Houston, and its floodplain is filled with sand and gravel. These deposits are valuable when found near a big city like Houston with a strong local construction industry. But, though the market for sand and gravel in Houston is large, neither production nor consumption is highly concentrated, and prices are set on a wide variety of terms. Some is sold by the cubic yard and some by the ton; some is sorted by degrees of coarseness and sold at difference prices--prices that fluctuate significantly over time and can vary by length of contract or distance to a buyer's worksite.

The value of a particular sand and gravel mine depends on the particular type of deposits it holds. Gravel is generally more expensive than sand in the Houston market because of its relative scarcity, and when it's sorted before sale, coarser gravel usually commands a higher price. Sand is usually classified descriptively as concrete sand, mortar sand, and bank

sand. Concrete sand is the coarsest and most valuable, and is used to make concrete; mortar sand is less coarse and is used by bricklayers; and bank sand is very fine and is typically used only to stabilize pipe bedding and create foundations. Sand and gravel of different grades can also be mixed into an aggregate used in construction.

Sand and gravel are both dry mined with a backhoe or wet mined with a dredge. Dredges are more expensive than backhoes, but they dig up more sand and gravel, and do it more quickly. Because the water table is so high along the San Jacinto, they're also the equipment most often used. What comes out of a dredge, though, is a watery mix of sand and gravel, which has to be pumped to a plant where the water can be drained off and the sand and gravel sorted by size or combined for aggregate before sale. Dredges in the Houston area can mine sand and gravel to depths of 60 to 70 feet, but operators regard a deposit as mined out--whatever its depth--when their dredges run into the thick layer of clay that lies beneath almost the entire San Jacinto floodplain. Everyone in the industry understands that even the sand and gravel above this clay cannot all be mined economically. One constraint is the need to set aside some land for the workplant, another is a legal requirement of setbacks for pit walls adjoining a public road, and a third is the common-law obligation not to undermine the property of one's neighbor.

Property owners in this market rarely mine their own deposits, instead leasing their land to sand-and-gravel operators for a royalty. But royalties are no more standardized than sales of sand and gravel--some royalties are paid as a flat rate per ton or cubic yard, and some are calculated at different rates based on the different grades of sand and gravel actually produced. Some royalties fluctuate with the market and some are set for the life of a contract.

B. The Hamblen Road Property

The property at issue in this case is a 31.41-acre tract located on Hamblen Road in Harris County, Texas. This tract was less than half of a larger parcel bought by an agent of a family named Wilkerson at a tax foreclosure auction in 1994. The Wilkersons had spotted white pines growing on the property before deciding to make a bid. White pines are valuable trees, and the Wilkersons thought that they might be bidding against people who didn't see their value. They were right--their agent successfully purchased the entire property for a little over \$50,000, and the Wilkersons quickly cut the timber and sold it for about \$45,000. In 1996, they transferred the entire parcel to a partnership named Terrene Investments, Ltd., that their family controls. Terrene is a limited partnership formed under Texas law, with its principal place of business in Texas, and under the Internal Revenue Code it is classified as a TEFRA

partnership.<sup>1</sup> Its partners were Deerbrook Construction, Inc.--the tax matters partner (TMP)<sup>2</sup>--and four Wilkerson family trusts.

Jim Wilkerson and his son Dennis owned another piece of property along the San Jacinto River, and in 1997 they noticed that there was a sand-and-gravel operation mining land adjacent to this other property. They investigated, and learned that the mine's operator was paying royalties to the landowner. This made them wonder if their own property might have some sand or gravel too. Sand and gravel deposits are detected, and their volume estimated, by taking core samples. The Wilkersons decided to have core samples taken from their land next to the already operating sand-and-gravel mine. But that coring turned up only the sand-and-gravel equivalent of a dry hole. The Wilkersons didn't give up--they suspected that they might be luckier with the Hamblen Road property. And they were right. Geotest

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<sup>1</sup> Unless otherwise noted, all section references are to the Internal Revenue Code in effect for 1998; all Rule references are to the Tax Court Rules of Practice and Procedure.

TEFRA is the Tax Equity and Fiscal Responsibility Act of 1982, Pub. L. 97-248, 96 Stat. 324, one part of which governs the tax treatment and audit procedures for most partnerships. See TEFRA secs. 401-407, 96 Stat. at 648-671. TEFRA requires that all "partnership items"--a term defined by section 6231(a)(3) and (4)--be determined at the partnership level; its general goal is to have a single point of adjustment during an audit rather than making separate adjustments for each partner. See H. Conf. Rept. 97-760, at 599-601 (1982), 1982-2 C.B. 600, 662-63.

<sup>2</sup> Each TEFRA partnership is supposed to designate one of its partners as the "tax matters partner" to handle TEFRA issues and litigation for the partnership.

Engineering, Inc. drilled holes in the property and its analysis of the core samples showed that 50 acres of the property were in the San Jacinto's floodplain. Geotest estimated that this part of the Hamblen Road property contained almost four million tons of valuable deposits down to a depth of between 60 and 70 feet. Jim pressed his son to start mining the deposits, but Dennis resisted. They then decided to have Terrene divide the property into three parcels--one parcel was the approximately 24 acres that analysis had shown did not have recoverable deposits, another was 19 acres in the floodplain that lay south of Hamblen Road, and the third was the remaining 31 acres of floodplain property north of the road.

Terrene donated the 19-acre parcel to the Assemblies of God Foundation in 1997, after talking with an Assemblies of God minister who also owned a local sand-and-gravel operation. Before donating the parcel, Terrene had it appraised --an appraisal that put its value at \$2,500,000, which Terrene deducted on its 1997 partnership return and which the IRS never challenged.

This case concerns the value of the 31-acre parcel lying north of Hamblen Road. After more fruitless attempts by Jim Wilkerson to persuade his son to get into the mining business, they decided to have Terrene donate this parcel to the Assemblies of God Foundation, too. Terrene again had it appraised, and the

two appraisers whom it hired both valued the parcel at about \$2.7 million. The Wilkersons were a bit skeptical, and talked with several people in the business before they had Terrene claim such a large deduction. Having convinced themselves that the appraisals were correct, they had Terrene donate the parcel to the Assemblies of God Foundation in November 1998, and claim a \$2.7 million charitable contribution deduction on its 1998 partnership return. Their initial skepticism was justified when the return was chosen for audit. The Commissioner determined that the fair-market value of the donated land was only \$150,000, and he mailed Terrene a notice of Final Partnership Administrative Adjustment (FPAA). Terrene timely filed its petition, and the case was tried in Houston on the valuation question alone.

#### Discussion

The question before us is really a question of just what effect the four holes drilled into the 31.41-acre parcel of the Hamblen Road property had on its value. Under section 170, the amount of the deduction for a contribution of property to a charity is its fair-market value (FMV) at the time of donation. Sec. 1.170A-1(c)(1), Income Tax Regs. The regulations define FMV as "the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or sell and *both having reasonable knowledge of*

*relevant facts.*" Sec. 1.170A-1(c)(2), Income Tax Regs (emphasis added); see also United States v. Miller, 317 U.S. 369, 373-74 (1943). In determining FMV, we look to the "highest-and-best use" for the property in question. See McMurray v. Commissioner, 985 F.2d 36, 40 (1st Cir. 1993), affg. in part and revg. in part T.C. Memo. 1992-27; Browning v. Commissioner, 109 T.C. 303, 323 (1997); Van Zelst v. Commissioner, T.C. Memo. 1995-396, affd. 100 F.3d 1259 (7th Cir. 1996); McLennan v. United States, 24 Cl. Ct. 102, 108 (1991), affd. 994 F.2d 839 (Fed. Cir. 1993). The parties agree that the highest-and-best use of the Hamblen Road property is mining it for sand and gravel.

There are three widely accepted methods of estimating FMV for any property: comparable sales, income capitalization (or discounted cashflow), and replacement cost. Our first step then is to decide which of these methods works best here. We immediately discard the replacement-cost method, which both parties agree is inappropriate in valuing mineral reserves. That leaves us to choose between the comparable-sales and discounted-cashflow (DCF) methods. Comparable sales uses market data, and looks for sales of property in the same market with similar characteristics that were made at arm's length. See Rev. Proc. 79-24, 1979-1 C.B. 565. DCF requires us to prepare a reasonable estimate of future income over time and discount it to present value. Figuring out a reasonable estimate of income for a sand-



sand-and-gravel property in turn forces us to estimate a number of factors:

- total volume of minerals on the property,
- setbacks,
- size of work area,
- slope of pit walls,
- natural waste,
- rate of extraction,
- royalty rate,
- discount rate, and
- residual value.

A. Parties' Positions

The Commissioner's proposed value of \$301,000 is based on the work of its expert, Edwin Moritz. Moritz is a member of the American Institute of Minerals Appraisers and the Society of Petroleum Engineers, and has appeared as an expert witness on the FMV of sand-and-gravel properties in other courts. He relies on the Uniform Standards for Professional Appraisers Practice (USPAP), the Uniform Appraisal Standards for Federal Land Acquisitions (UASFLA), and caselaw for the proposition that the comparable-sales approach is best. See Cloverport Sand & Gravel Co. v. United States, 6 Cl. Ct. 178, 189 (1984). After searching the deed records in the county where the Hamblen Road property is located, Moritz identified five sales that he said were possibly comparable. Moritz interviewed the buyers and sellers in each of these transactions and concluded that three of them were in fact comparable. He adjusted the prices involved to account for various differences with the Hamblen Road property and then used

a weighted average that produced a value of \$9,050 per acre. Multiplying by the number of acres in the parcel at issue led to an appraised value of \$284,300.

Moritz also used the DCF approach. He first developed a hypothetical mining plan. His plan used 50-foot setbacks to create an adequate buffer between the pit and adjacent property, and assumed a work area of approximately seven acres, to be set on a portion of the property that could not, in his view, be economically mined. Moritz also believed that the pit walls would have to remain at a 32-degree slope in order to be stable. His mining plan calculated that with the setbacks, pit-wall slope, and operating area, the property contained 1.9 million minable tons of aggregate. He then took another 10% off to account for normal waste. He estimated that the mine would produce 150,000 to 200,000 tons annually, and generate royalties of \$0.50/ton. Using a 28% discount rate to compute present value, these estimates, assumptions, and conclusions taken together led him to a value of \$326,000 for the mining interest. He computed the residual value of the property to be \$1,000 per acre and discounted that to a total present residual value of \$9,900, which gave a final DCF value of \$335,900. Moritz finally weighted the two values--two-thirds of the comparable sales value and one-third of the DCF value--and came up with a final estimate of \$301,000.

Terrene contends that the FMV on November 15, 1998 was \$1,801,618. Terrene first argues that no comparable sales exist, so we must use only the DCF method. Terrene also argues--crucially as it turns out--that the type of interest to which we should be applying that method is a royalty interest, not an operating interest. Terrene's expert, Gerald Ebanks, began with the field logs and samples that were part of a Geotest report that wasn't contested by either party. Based on these soil borings, Ebanks created an isopach map<sup>3</sup> of the aggregate across the property. He then subtracted a 25-foot nonminable setback next to Hamblen Road, multiplied the remainder by 12% to reflect the increase in the volume of sand and gravel once they're brought to the surface, and finally determined that the total minable deposits were 3,973,149 tons. He estimated that a prudent slope of the pit walls and the usual operations of a mine would reduce the total tons of minable aggregate to 3,637,000. Unlike Moritz, Ebanks did not include a work area in his calculation because he assumed that the operator would build a workplant somewhere on the 24-acre parcel still owned by Terrene that was sand-and-gravel-free. Ebanks's hypothetical mine operator would produce at a much higher rate than Moritz's--

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<sup>3</sup> An isopach map depicts the thickness of deposits (in this case, sand and gravel deposits) as contour lines, called isopachs. Think of it as a topographic map, except that the contour lines are subterranean. Ebanks's isopach map assumes that changes in the thickness of sand and gravel deposits between boreholes are linear.

360,000 tons each year. He also used a higher royalty rate of \$0.75/ton and a lower discount rate of only 9%. These estimates, assumptions, and conclusions taken together yielded an FMV of \$1,801,618.

The Commissioner tries to undermine Terrene's valuation by noting that Ebanks had never appraised a tract of real property before, and had previously testified as an expert witness only about the value of oil-and-gas interests. But we find that both experts were at least reasonable in their work--there were no questions of "junk science" here. Unable simply to rely on one expert or the other, we weigh their conflicting conclusions in light of other credible evidence in the record and a close examination of their premises. We look first to the reasonableness of the methods they chose, and then to the reasonableness of the assumptions they made. The answer we reach, not surprising in a valuation case, is somewhere between what both of them proposed.

B. Comparable Sales

The comparable-sales approach uses sales of similar properties to estimate FMV. "It is generally accepted that comparable sales provide the best evidence of value." Cloverport, 6 Cl. Ct. at 189; Van Zelst, T.C. Memo. 1995-396. Moritz identified five sales as potentially comparable to the Hamblen Road property. He himself discarded two of them as not

made at arm's length. One sale that Moritz did use (his Sale #4) was of a 41-acre property in the same area as the Hamblen Road property, but this sale was made before either the buyer or the seller knew there was sand and gravel beneath the property. Moritz's Sale #5, 50 acres and located even closer to Houston than the Hamblen Road property, was likewise made at a price negotiated before either party knew the property held valuable deposits.

Given the ignorance of the buyers and sellers in these sales, we will not treat them as comparables. One of the requirements of FMV is that both the buyer and seller be informed regarding all the factors relevant to the land's value. Foster v. United States, 2 Cl. Ct. 426, 446 (1983); see also sec. 1.170A-1(c)(2), Income Tax Regs. (both buyer and seller must have "reasonable knowledge of relevant facts"). We find that Moritz's Sales #4 and #5 fail this requirement. That leaves only Sale #3, a 60.48-acre parcel that was sold for \$150,000. This property was known by both buyer and seller to have sand and gravel deposits, but the parcel was contaminated by oil and was burdened with oil pipeline easements and leases that restricted its development. Though the Hamblen Road property's own mineral rights were also severed (Texaco owned them in 1998), there was no active or pending oil-and-gas drilling at the time of the donation, leading us to find that Sale #3 was not comparable either.

Without comparable properties, we turn to the DCF method.<sup>4</sup>

C. Discounted Cashflow

The DCF method calculates a cashflow from a property and then discounts it to the present. In the case of the Hamblen Road property, using the DCF method means creating a hypothetical mining plan--estimating the volume of recoverable sand and gravel, figuring out how long it would take an operator to mine it, finding a reasonable royalty rate and residual value, and then applying an appropriate discount rate to the resulting cashflow.

1. Volume

The parties disagree about almost all the component factors, even the gross volume of valuable sand and gravel beneath the property. Geotest Engineering concluded that the property holds 3,899,696 tons of sand and gravel, a number it reached using its own core samples and the "average end area" method. Ebanks and Moritz also started with Geotest's core samples, but Ebanks used them to create his isopach map. He then used this map together with a planimeter<sup>5</sup> to get a gross volume, while Moritz used the Geotest core samples to calculate an average of the net aggregate

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<sup>4</sup> See Cloverport, 6 Cl. Ct. at 194 ("Because the plaintiff's property is an income producing property capable of producing a stream of income derived from what both parties concede is the property's highest and best use, the income capitalization approach is a preferable valuation method").

<sup>5</sup> A planimeter is a mechanical device used to calculate the volumes of irregularly shaped three-dimensional shapes.

thickness of the property. Each man then reduced the gross volume he had calculated to reflect a number of factors. What was left were two competing final recoverable volumes.

We find that all the different methods used by Geotest, Ebanks, and Moritz are reasonable for making volume estimates on this property. But neither Ebanks's nor Moritz's method is transparent. Ebanks's final volume number reflects assumptions about the required setbacks and set asides for a workplant area with which, as discussed below, we disagree. Moritz's final volume number reflects a set of different assumptions, but we disagree with some of them, too. This creates a problem, because neither expert's volume computations are adjustable using information from the record. Geotest's number has the signal advantage of being both reasonable and adjustable, so it's the number we begin with. We therefore find that there were 3,899,696 tons of valuable deposits beneath the Hamblen Road property.<sup>6</sup>

The parties do agree that no reasonable mining plan could lead to the recovery of every last one of those tons. But their agreement stops there, and so we must review each of the factors affecting the total recoverable volume that they dispute.

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<sup>6</sup> We do not adopt Terrene's suggestion to add another 12% to this number as an adjustment for an increase in volume of the sand and gravel when they are mined, because Geotest's reported numbers already take this adjustment into account.

i. Setbacks

The first of these is setbacks. Setbacks are strips of unmined land between pit walls and property lines, and they can vary in size. Legal restrictions in Texas require a 25-foot setback for pit walls adjoining a public road,<sup>7</sup> but the setbacks for pit walls not adjacent to a public road are up to the operator and property owner. The evidence showed setbacks in the Houston area range from 5 to 50 feet. Some of this variance depends on what type of soil is present on the property--the more compact the soil in a pit wall, the less likely it is to collapse and the narrower the setback can be. And some of the variance simply lies in an operator's risk preference. (The risk being that the walls collapse and damage adjoining land.)

We begin by finding that Hamblen Road, a public road, runs along the southern edge of the property for 1,022 feet. On the other sides, there is a private road on the east (1,600 feet), a railroad easement on the west (1,550 feet), and the remaining 24-acre parcel on the north that Terrene decided to keep (695 feet).<sup>8</sup> Other than along Hamblen Road, then, the precise size of the setback is entirely discretionary. We do think that prudence

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<sup>7</sup> See Tex. Nat. Res. Code Ann. sec. 133.044 (2005).

<sup>8</sup> The parties introduced good maps of the property, which show it to be quadrilateral--but it's not a rectangle, and there's nothing in the record describing the angles involved, making areal calculations of parts of the property necessarily imprecise. We also round to the nearest whole number here and throughout our calculations.



would impel a reasonable operator and landowner to consider factors such as minimizing disturbance to the neighbors. And we found credible the testimony of both a local operator who used 50-foot setbacks and one who used 100-foot setbacks. Questioning by Terrene's attorney, though, brought out that the 100-foot setbacks were dictated by a real-estate developer who wanted to build roads around the pit once it was exhausted and filled with water, to accommodate what he was planning to call lakefront homes. Neither party suggested that what was left of the Hamblen Road property after it was mined out would be of interest to homebuilders, so we find it most likely that an operator would minimize setbacks to maximize his volume of minable material. Terrene claims that local industry practice is to leave 5-foot setbacks where not required by law. This seems rather small, and not in accord with the most credible evidence. We therefore find that a 10-foot setback on the western and northern edges is appropriate, and that a 25-foot setback on the eastern edge--where there is a private road--would be most reasonable in light of the legally mandated 25-foot setback on the property's southern boundary.

The effect this would have on the volume of recoverable deposits is unclear, because the Geotest report does not describe its formula for calculating minable material in great detail. Therefore, we resort to an indirect, and necessarily imprecise,

way of determining how much material will be unrecoverable due to these setbacks. We can calculate the approximate acreage taken out of the evaluation by these setbacks:

- southern edge: 1022 feet and 25-foot setback yields 0.59 acres;
- eastern edge: 1575 feet (1600 feet - 25 feet already counted) and 25-foot setback yields 0.90 acres;
- northern edge: 670 feet (695 feet - 25 feet already counted) and 10-foot setback yields 0.15 acres; and
- western edge: 1515 feet (1550 feet - 35 feet already counted) and 10-foot setback yields 0.35 acres.

The setbacks therefore take up a total of 1.99 acres, which we round to 2 acres.

We also have to make some assumptions about the distribution of the deposits beneath the property, which is inherently unknowable until mining begins. Ebanks prepared his isopach map using the data from the four boreholes taken on the property plus three of the boreholes on the neighboring tracts. This map suggests that the thickest deposits are in the southwestern corner of the parcel and the thinnest in the northwestern corner, but without enough variation to allow one to easily calculate different volumes for different parts of the property. Because the adjustment for setbacks affects the entire perimeter of the property, we find that it is reasonable to assume for these calculations that the sand and gravel are uniformly distributed.

Dividing 3,899,696 tons by 31.41 acres, we get 124,155 tons of sand and gravel per acre. Thus, a loss of 2 acres of land to setbacks will reduce the available volume by 248,310 tons.

ii. Work Area

The next factor reducing recoverable volume is the need for some land to be set aside for a workplant to sort the excavated material. We find credible the evidence that most plants are built on the property being mined. Terrene disagrees, arguing that we should not make any adjustments for a workplant because one might be set up next door on property that is still owned by Terrene or on the tract already given to the Foundation. We are unpersuaded. No evidence exists that shows Terrene ever contemplated such an offer during its talks with the Foundation, and we find that it would not be practical to have a plant on the previously donated parcel because it lies on the other side of a very busy Hamblen Road.

A closer question is the size of the work area. The Commissioner urges us to find that roughly seven acres would be needed, while Terrene claims it would take only three. Voluminous testimony on this exact point convinces us that four acres would suffice. Local operators Enloe and Vestal credibly testified that, in their experience, operators on plots the size of the Hamblen Road property usually used about three-to-four acres to set up their work area. According to witnesses, the

most logical place for a worksite would be the northern section of the property as it has the least amount of saleable materials. As an operator might need additional land outside the work area to put access roads in, we opt for the high end of local custom. The Commissioner's argument for almost double that amount of land seems unreasonable. Using our tons-per-acre number from the previous section, the reduction attributable to a work area is 496,620 tons.<sup>9</sup>

iii. Pit Slope

We next turn to the issue of the pit wall's angle of repose. Terrene argues that local practice is to use nearly vertical walls to maximize recovery, while the Commissioner argues for a much more gentle slope as necessary to create stability and prevent the walls from collapsing. In support of his position, the Commissioner argues that while packed sand mixed with clay can remain stable at steeper slopes, the soil on the subject property is much too loose to hold.

We disagree. Credible testimony at trial indicates that most operators in the Houston area dig pits with almost vertical walls, because enough clay is present in the pit wall to make it more cohesive than ordinary soil and because the water that fills a pit when the mining is finished produces a lower difference in

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<sup>9</sup> The math: 124,155 tons/acre x 4 acres = 496,620 tons.

pressure between the wall and pit than would a hole filled only with air. Both these factors make the pit wall more stable. It also keeps the soil of the pit's edges moist and therefore even more cohesive. Although some portions of the pit walls may well crumble over time, that crumbling is why the setbacks are needed. We also take judicial notice that the Houston area more closely resembles a swamp than a desert--there is plenty of water in the area to fill in the property when mining is done. We therefore find in favor of Terrene on this point, and agree with its experts that the pit walls can be left at a 75-degree slope. Ebanks credibly testified that at this angle, approximately 3% of the volume would be lost, so we will subtract another 94,643 tons.<sup>10</sup>

iv. Waste

The final reduction we must consider is the waste that inevitably occurs during extraction and processing. Terrene makes no adjustment; the Commissioner wants us to use 10%. Neither side introduced any especially compelling evidence on this point, but we found Moritz credible in saying that some waste is inevitable in any mining operation and that 10% is the industry's rule of thumb. So by a bare preponderance of the evidence, we side with the Commissioner. Using the

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<sup>10</sup> The math thus far:  $3,899,696 - 248,310 - 496,620 = 3,154,766$ .  $3,154,766$  (tons remaining after setbacks and work area accounted for)  $\times 97\% = 3,060,123$ .

Commissioner's 10% waste allowance leads to another reduction of 306,012 tons.<sup>11</sup>

Our conclusion after all these calculations is that there are 2,754,111 tons of recoverable deposits.

## 2. Rate of Extraction

We must next determine how long the mining will take. The Commissioner's computation reflects his assertion that it would take approximately six-to-eight months to begin operations, while Terrene argues that it would take only three. We find in favor of Terrene on this point because the Assemblies of God Foundation could have moved quickly to start mining the property since it had already leased the neighboring property. We will use three months as our hypothetical delay for site preparation.

The parties also butt heads over how much such a mining operation could produce--the IRS contends an upper limit of 200,000 tons annually, while Terrene argues for 360,000 tons. Moritz's estimate for the Commissioner was largely based on unnamed producers whom he had interviewed. Ebanks also interviewed local operators, some of whom backed up Ebanks with their testimony. Ebanks noted in particular one local operator who explained that the Hamblen Road property would be considered small by some operators--not so small as not to be of interest,

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<sup>11</sup> 3,060,123 (tons remaining after setbacks, work area, and pit slope accounted for) x 10% = 306,012.

but small enough to have an impact on the rate of production since smaller operators use lower-volume equipment and are somewhat less efficient. We found credible the evidence Terrene offered that one nearby quarry produces at about 25,000 tons/month on a 28-acre parcel, and that one large operator whom Ebanks interviewed estimated 40,000 tons/month would be reasonable for an operator working on the Hamblen Road property. The 30,000 tons/month that Terrene suggests seems, in these circumstances, to be reasonable. We therefore find for Terrene on this point, and will use a 30,000 tons/month extraction rate. This amount could have easily been absorbed into the Houston market, where annual consumption of sand and gravel exceeded 60 million tons in the late 1990s. Cf. Cloverport, 6 Cl. Ct. at 199. Given our prior finding of 2,754,111 tons of recoverable materials, extraction at this rate would mean that the operation would take place over 92 months.<sup>12</sup>

### 3. Royalties

The royalty rates for sand and gravel in the Houston area are not uniform. Some operators pay a single rate based on volume; others pay different rates for the different materials (e.g., concrete sand, masonry sand, etc.). Local operators around Houston paid anywhere from \$0.25 to \$1.00/ton to

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<sup>12</sup> 2,754,111 divided by 30,000 equals 92 months with rounding. If production began after a three-month delay for site preparation, the hypothetical income stream begun in 1998 would peter out by the end of 2006.

landowners in late 1998, with higher royalties typically going to sand-and-gravel mines located very close to construction sites due to the low value-to-volume ratio of sand and gravel and the cost of transportation.

The Hamblen Road property is small, so we find it most reasonable to assume that its deposits would mostly be sold as aggregate, in contrast to a variety of differently priced grades of sand and gravel, and would attract a single price and yield a single royalty per ton. Ebanks credibly testified that the average royalty rate paid to the Assemblies of God Foundation for materials mined from the first property donated to it was \$0.71/ton, which was paid during a 14-month span which includes November 15, 1998. We think this is the best evidence of a reasonable royalty for sand and gravel from the subject property, especially since it falls well within the range in the local market. We therefore find that \$0.71/ton is a reasonable royalty rate to use in the hypothetical mining plan.

At \$0.71/ton, the value of the royalty interest in the expected 2,754,111 tons that can potentially be sold from the subject property is \$1,955,419. However, we must take into account that this number represents a value received over time as the sand and gravel is mined and sold. To arrive at the figure Terrene may properly claim as a charitable deduction, we must



discount this royalty stream back to its net present value on November 15, 1998.

4. Discount Rate

The single largest source of the disparate valuations claimed by the parties is the discount rate each applies. When plugged into a present-value analysis, the rate spread of 19 percentage points yields a difference in valuation of more than \$600,000. Ebanks used a 9% discount rate, which he arrived at by taking the prime rate as of November 1998 and adding 1%. Ebanks used this formula for most of his past valuations and believes it to be an acceptable practice for valuing businesses in the extraction industry. Moritz reached for a much higher number--28%. He cited a "sensitivity analysis" of between 24% and 59%, a range that he said reflected the risk perceived by the market in developing the Hamblen Road property.

Coming up with such a high discount rate was due to two fundamental choices that Moritz made. The first was to treat the relevant cash stream to be discounted as a cash stream from a mining operation rather than a royalty interest from a mining operation. As the Commissioner conceded in his brief, the owner of a royalty interest bears much less risk than does an operator; that by itself makes a 28% discount much too high. Moritz's second choice--to try to derive the discount rate from the purchase price of two of the properties that he used in his

comparable-sales analysis--was no less flawed. The reason is that the properties he used--his Sales #3 and #5--were properties that, as we have already discussed, were not comparable to the Hamblen Road property. Implicit in his conclusion that the appropriate discount rate is 28% is that those sales' purchase prices reflect only their value to a mining operator. But as we discussed above, Sale #5 was made at a price agreed to before either side knew there were sand and gravel deposits beneath the property, and Sale #3 was of a property contaminated by oil-and-gas drilling. For the same reasons we rejected those properties as comparable sales, we reject them as sources from which one can derive a reasonable discount rate in this case.

On the other hand, there is some risk that an operator may suffer interruptions that will affect the stability of the royalty stream which the property's owner would receive. An addition of only 1% to the going prime rate hardly takes this into account.

We thus also reject Ebanks's analysis, if only in part. He started his calculation of a discount rate using the prime rate in November 1998. The cases seem fairly consistent in saying that a court should instead begin with the appropriate risk-free rate.<sup>13</sup> We will start with a rate of 4.5%, which was the average

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<sup>13</sup> See Jones & Laughlin Steel Corp. v. Pfeifer, 462 U.S. 523, 537 (1983) ("the discount rate should be based on the rate  
(continued...)

rate on three-year and five-year Treasury notes on November 13, 1998, the business day before the date of donation.<sup>14</sup> Then we add risk premiums to that to create an implied rate of return for buyers of comparable properties. As explained by the AICPA:

The discount rate is the rate of return that Investors require as a condition of purchasing the type and class of property being appraised. The rate may vary, depending on economic and other conditions, but generally should be based on market rates, reflecting the rate of return demanded by buyers of comparable properties. In addition, the following factors should be considered in determining the discount rate:

- Recovery of the investment over its estimated economic life
- A safety factor to recognize additional risk, management burden, and lack of the buyer's liquidity
- An investment factor to recognize the property's quality of income, its marketability, and tax advantages

AICPA Audit and Accounting Guide, "Guide For the Use of Real Estate Appraisal Information", sec. 3.27 (May 1, 1997).

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<sup>13</sup>(...continued)  
of interest that would be earned on 'the best and safest investments'") (citation omitted); Sauers v. Alaska Barge & Transp. Inc., 600 F.2d 238, 246 n.15 (9th Cir. 1979); Estate of Adams v. Commissioner, T.C. Memo. 2002-80.

<sup>14</sup> Federal Reserve Statistical Release, H.15 - Historical Data, <http://www.federalreserve.gov/releases/h15/data.htm>. We use the average of the three-year and five-year notes because the total length of the hypothetical royalty stream is approximately eight years, with the average royalty payment coming at approximately year four.

The property here, to be precise, represents an illiquid eight-year stream of royalty payments from a smallish parcel of land. Part of the risk is the risk of inflation, but inflationary risk is presumably reflected in the rate on the Treasury notes. The parties left us with little in the way of estimating noninflationary risk to the value of the income stream (i.e., the probability that the income stream would be interrupted). At a minimum, we think that we have to add in another 3%, which was the spread between Treasury notes and corporate bonds rated Baa back in November 1998. Federal Reserve Statistical Release, H.15 - Historical Data, <http://www.federalreserve.gov/releases/h15/data.htm>. But we also think that the risks associated with interruptions of operations on the Hamblen Road property--interruptions like flooding, malfunctioning equipment, small-operator bankruptcy, etc.--and the risk of interruptions in getting a mine started in the first place require an additional risk premium of 4%. The final discount rate that we will use, then, is 11.5%, which (as a reality check) is reasonably close to discount rates in other cases involving royalty interests. See, e.g., Zuhone v. Commissioner, 883 F.2d 1317, 1324-1325 (7th Cir. 1989) (7.5% over Treasury rate for the year in question; hypothetical operation), affg. T.C. Memo. 1988-142; E. Minerals Intl. v. United States, 39 Fed. Cl. 621, 631 n.12 (1997) (6.5% over Treasury rate; existing

operation), revd. on other grounds sub nom. Wyatt v. United States, 221 F.3d 1090 (Fed. Cir. 2001); Cloverport, 6 Cl. Ct. at 200 (5% over Treasury rate; existing operation).

5. Other Factors

Moritz raised a parade of improbable specters that might also diminish the value of the property. For example, he included in his report the possibility of the property's being subject to wetland regulation, cited social pressure as a factor for lowering the value, and noted other regulatory risks that might dampen the appraised value. We take none of these claims seriously. It was well established in the record that property all along the San Jacinto River was being mined for sand and gravel in the late 1990s.

6. Residual Value

After the mining operations have ended, the property will have some remaining value, even if it is just a pool of stagnant water surrounded by a fringe of dry land. Ebanks did not address this issue in his report. Moritz came up with a future value of \$1,000/acre for the property.<sup>15</sup> We accept his figure.

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<sup>15</sup> Moritz calculated this figure by first using Harris County's appraisal value of \$157,100, which came to \$4,600 per acre. He then adapted his comparable-sales approach. Sales #2 and #4 were sold after being depleted of sand and gravel resources; Sale #4 sold at a price 67% less than its original value as vacant floodplain land. In reviewing county records, Moritz saw an appraisal range of between \$500 and \$1,500 per acre for depleted mining property. By extrapolating the pit-discount figure, Moritz concluded that the subject property could reasonably be expected to fetch \$1,000 per acre once the deposits  
(continued...)

D. Tables

*Table 1.1 - Computation Formulas*

	<u>A</u> <u>Year</u>	<u>B</u> <u>Tons Mined</u>	<u>C</u> <u>Royalty</u>	<u>D</u> <u>Present Value at</u> <u>11/15/98</u>
1	1999	315000	B1 * 0.71	C1/((1.115)^0.63)
2	2000	360000	B2 * 0.71	C2/((1.115)^1.63)
3	2001	360000	B3 * 0.71	C3/((1.115)^2.63)
4	2002	360000	B4 * 0.71	C4/((1.115)^3.63)
5	2003	360000	B5 * 0.71	C5/((1.115)^4.63)
6	2004	360000	B6 * 0.71	C6/((1.115)^5.63)
7	2005	360000	B7 * 0.71	C7/((1.115)^6.63)
8	2006	279111	B8 * 0.71	C8/((1.115)^7.63)
	Subtotal	<u>sum(B1:B8)</u>	<u>sum(C1:C8)</u>	<u>sum(D1:D8)</u>
	Plus Residual Value			\$13,148
	<b>TOTAL DISCOUNTED VALUE</b>			<b><u>D10 + D12</u></b>

*Table 1.2 - DCF Analysis*

<u>Year</u>	<u>Tons Mined</u>	<u>Royalty</u>	<u>Present Value at</u> <u>11/15/98</u>
1999	315,000	\$223,650	\$208,826.56
2000	360,000	\$255,600	\$214,043.88
2001	360,000	\$255,600	\$191,967.61
2002	360,000	\$255,600	\$172,168.26
2003	360,000	\$255,600	\$154,410.99
2004	360,000	\$255,600	\$138,485.19
2005	360,000	\$255,600	\$124,201.97
2006	279,111	\$198,169	\$86,363.07
Subtotal	<u>2,754,111</u>	<u>\$1,955,419</u>	<u>\$1,290,467.53</u>
Plus Residual Value			\$13,148.00
<b>TOTAL DISCOUNTED VALUE</b>			<b><u>\$1,303,615.53</u></b>

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<sup>15</sup>(...continued)  
had been depleted, which is within the range of prices in the county. Once discounted to present value at 11.5%, at the end of eight years--the property's useful life as a mine--it has a present value of \$13,148.

Conclusion

We find that the value of the Hamblen Road property on November 15, 1998, was \$1,303,616.

Decision will be entered  
under Rule 155.